Crop Science Vol. 41 No. 1, p. 274-a-275

# Registration of ICGV 87354 Peanut Germplasm with Drought Tolerance and Rust Resistance

1. L.J. Reddy *ac,

2. S.N. Nigam,

3. R.C.Nageswara Rao and

4. N.S. Reddy

ICGV 87354, a drought tolerant peanut (Arachis hypogaea L. Fabaceae subsp. hypogaea var. vulgaris) germplasm (Reg. no. GP-97, PI 568164) was released in 1999 by the Plant Materials Identification Committee of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) because of its tolerance to drought, resistance to rust (caused by Puccinia arachidis Speg.), and field resistance to peanut bud necrosis.

ICGV 87354 is derived from a cross between `Argentine' (EC 106965) and PI 259747. Argentine is a U.S. Spanish cultivar from PI 121070 (Isleib et al., 1994). PI 259747 is a landrace from Tarapoto, Peru belonging to the botanical variety, Peruviana and is resistant to rust and late leaf spot [caused by Phaeoisariopsis personata (Berk. & Curt.) Arx syn. Cercosporidium personatum (Berk. & Curt.) Deighton] (Subrahmanyam et al., 1995) and tolerant to drought (Reddy et al., 1994). ICGV 87354 was developed through nine generations of bulk selection. The full pedigree of ICGV 87354 is (Argentine/PI 259747) F2-B2-B1-B1-B1-B2-B1-B1-B1-B1

ICGV 87354 has erect growth habit, sequential flowering, and elliptic green medium-sized leaves (IBPGR and ICRISAT, 1992). It has an average of six primary and five secondary branches. The plant height and canopy width are about 23 and 46 cm, respectively. The maturity of ICGV 87354 at ICRISAT center, Patancheru, is around 114 d during rainy seasons, and 130 d during post rainy seasons. It has mainly two-seeded pods which are characterized by a slight beak, none to slight constriction, slight reticulation, and moderate ridge. Pod length averages 29 mm and pod width averages 13 mm. Seed of ICGV 87354 are rounded with flat ends and have a tan testa. Meat content ranges from 55 to 73% across different Indian locations, averaging 66% during the rainy season. The 100-seed weight averages 46 g, with 22% protein [N(5.46)] and 43% oil (5% moisture, w/w).

In six trials conducted at three locations in India during 1984 to 1985, ICGV 87354 had a pod yield advantage over checks ranging from 42.3% over `JL 24' to 22.0% over `Kadiri-3'. In 11 trials conducted by the All India Coordinated Program on Oilseeds (AICORPO)

at seven locations in the National Drought Nursery in India during 1987 to 1989, the pod yield advantage of ICGV 87354, ranged from 20% over `TMV 2' and NC Ac 343 to 10% over JL 24. In the trials conducted for 4 yr during 1989 to 1992 in a chronic drought prone area (Durgapura), in Rajasthan, India, ICGV 87354 consistently outyielded JL 24, with a pod yield advantage of 33% and a seed yield advantage of 18%. In all the trials conducted at six Indian locations, ICGV 87354 gave significantly higher pod yields and meat content than its drought tolerant parent, PI 259747 under rainfed conditions at all six locations. The pod yields of ICGV 87354 in these trials ranged from 0.82 to 4.27 Mg ha−1 with an average yield of 1.99 Mg ha−1 as compared with a range of 0.24 to 3.94 Mg ha−1 and a mean of 0.92 ha−1 in the latter. The meat content of ICGV 87354 ranged from 55.0 to 72.7% with an average of 65.7%, compared with 47.9 to 69.1% and a mean of 54.3% for PI 259747. ICGV 87354 gave higher vegetative and pod yields than the known drought tolerant cultivar, TMV 2 under irrigated, rainout shelters, and rainfed conditions at seven Indian locations. In Indonesia, ICGV 87354 also gave significantly more pod yields with higher harvest index than the local control cultivars: `Tapir', `Kelinci', and `Gajah' (Wright et al., 1992).

Under rust infested conditions, ICGV 87354 had a score of 3.0 compared with 9.0 for JL 24 and Kadiri-3 (both highly susceptible) when scored on a 1-to-9 scale (Subrahmanyam et al., 1995). ICGV 87354 maintained its rust resistance with a mean score of 3.6, compared with 5.5 for `Sellie' in two years (1993–1994 and 1994–1995) of field screening at Maleku, Republic of South Africa. For late leaf spot in the field trials conducted at Darsi, AP, India, ICGV 87354 recorded a score of 5.0 compared with 7.0 and 8.0 for JL 24 and `TPT 2,' respectively, on a 1-to-9 scale (Subrahmanyam et al., 1995). In field trials conducted during 1988 and 1990 in three hot spot locations in India, ICGV 87354 showed field tolerance to peanut bud necrosis disease with a mean incidence of 20.1%, compared with 53.5% for JL 24.

The gene bank curator of Genetic Resources and Enhancement Program, ICRISAT, Patancheru will maintain the Breeder seed of ICGV 87354. Limited quantities of seed without limitation for use will be made available on request. Seed of ICGV 87354 are also deposited with the USDA National Seed Storage Laboratory, 1111 Mason St., Fort Collins, CO 80521-4500.